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(54) Abstract Title

Method for selecting and controlling connection with internet service provider

(57) A method for selecting an Internet service provider (ISP) 12 using a dynamic host configuration protocol (DHCP) in a point-to-point protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL) 16 and a method for controlling connection with the selected ISP. According to the above methods, it is possible for a subscriber 10 to directly receive desired data from the selected ISP 12 and to control the points in time at which a connection with a selected ISP is opened and closed since the subscriber can directly select the ISP by providing the ID of the ISP desired by the subscriber using the option field of the DHCP message to an ADSL terminal unit-remote (ATU-R) 102 when a predetermined terminal such as a personal computer (PC) 104 is connected to the ADSL 16.

FIG. 1

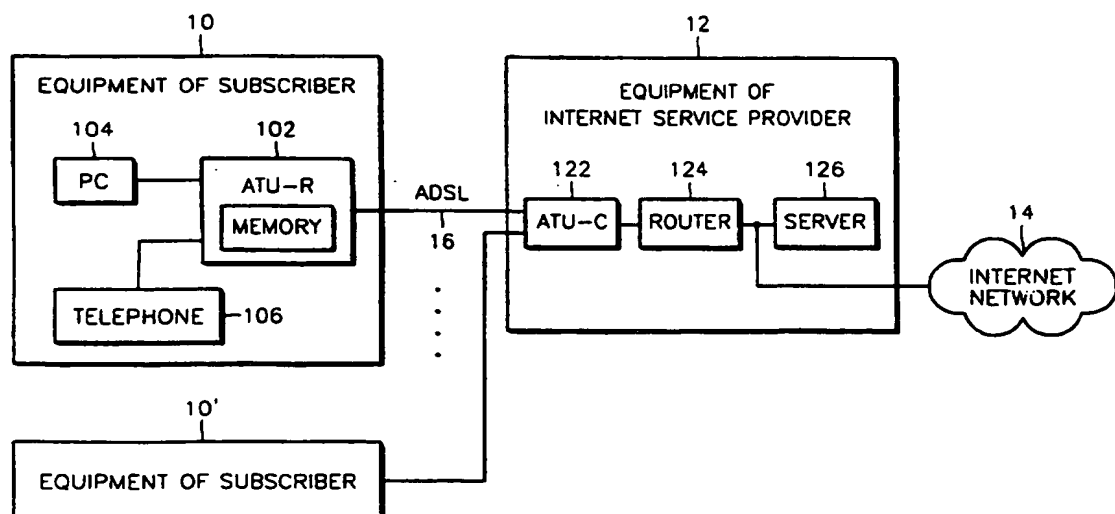


FIG. 1

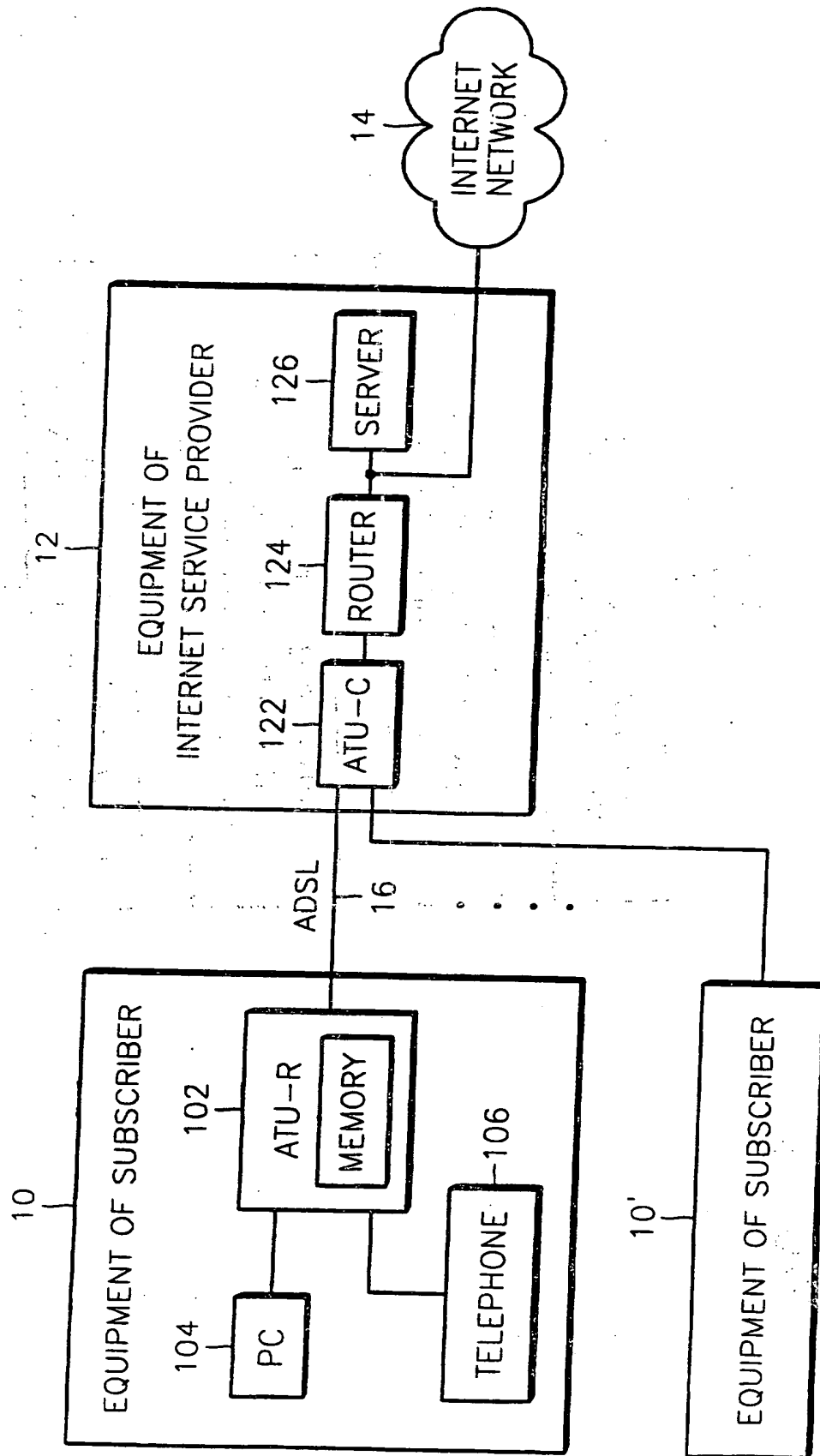
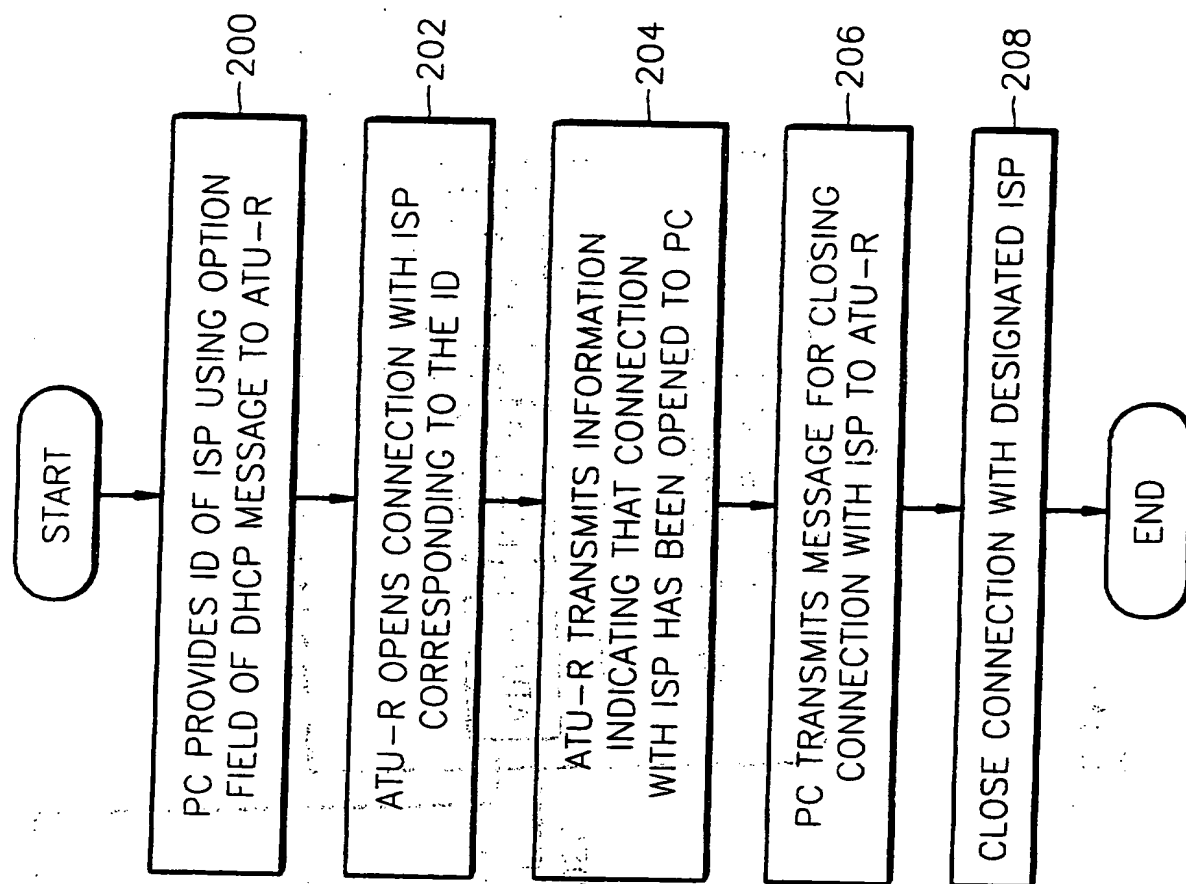


FIG. 2



METHOD FOR SELECTING AND CONTROLLING CONNECTION WITH
INTERNET SERVICE PROVIDER

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The present invention relates to a method for selecting an Internet service provider (ISP) in a point-to-point protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL) using a dynamic host configuration protocol (DHCP) and a method for
10 controlling connection with the selected ISP.

It is an aim of the present invention to provide a method for selecting an Internet service provider (ISP)
15 using a dynamic host configuration protocol (DHCP) in a point-to-point protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL).

It is another aim of the present invention to provide
20 a method for controlling connection with the selected ISP according to the above method.

According to a first aspect of the present invention, there is provided a method for selecting an Internet service provider (ISP) by an equipment of a subscriber in
25 a point-to-point protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL), wherein the equipment of the subscriber directly selects the ISP by designating the ID of the desired ISP using a dynamic host configuration protocol (DHCP).
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The ID of the ISP is preferably designated using the option field of the DHCP message.

According to a second aspect of the invention, there is provided a method for controlling a connection with a selected Internet service provider (ISP) by an equipment of a subscriber using a dynamic host configuration protocol (DHCP) message in a point-to-point protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL), comprising the steps of (a) a subscriber PC, included in the equipment of the subscriber, designating the ID of a desired ISP using the option field of the DHCP message and providing the DHCP message to an ADSL terminal unit-remote (ATU-R) included in the equipment of the subscriber, (b) the ATU-R which received the DHCP message opening the connection with the ISP designated by the ID and transmitting information indicating that the connection with the ISP is opened to the subscriber PC, (c) when a desired service is terminated, the subscriber PC transmitting a message for closing the connection with the designated ISP to the ATU-R, and (d) when the close message is received, the ATU-R closing the connection with the designated ISP.

It is preferable that the step (b) further comprises a step of storing information on the ISP designated by the ID in a predetermined memory and that the step (d) further comprises a step of erasing the information stored in the predetermined memory when the close message is received.

For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 schematically shows the structure of a point-to-point protocol (PPP) system which adopts an asymmetrical digital subscriber line (ADSL); and

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Figure 2 is a flow chart for explaining a method for selecting an Internet service provider (ISP) according to the present invention and a method for controlling connection with the selected ISP.

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Figure 1 schematically shows the structure of a point-to-point protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL).

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In Figure 1, reference numerals 10 and 10', 12, 14, and 16 respectively denote equipment of a subscriber, equipment of an Internet service provider, an Internet network, and an ADSL for connecting the equipment 10 and 10' of the subscriber to the equipment 12 of the Internet service provider. Here, the equipment of the subscriber 10' is one of a plurality of equipment of subscribers such as the equipment 10 of the subscriber. Therefore, the equipment 10 of the subscriber will be mainly described.

20

In the equipment 10 of the subscriber, a personal computer 104 and a telephone 106 are connected to an ADSL terminal unit-remote (ATU-R) 102. The equipment 12 of the Internet service provider includes an ADSL terminal unit-center (ATU-C) 122, a router 124, and a server 126.

25

The data received from the server 126, the Internet network 14, and the equipment 10' of the subscriber is

transmitted from the ATU-C 122 to the ATU-R 102 through the ADSL 16 using a digital subscriber line access multiplexor (DSLAM) (not shown). Conversely, the data generated by the ATU-R 102 is transmitted to the ATU-C 122 through the ADSL 16. A MODEM for the ADSL is included in the ATU-R 102 and the ATU-C 122.

The development of the ADSL 16 aiming at a video on demand (VOD) did not draw much interest since the world-wide use of the VOD became inactive. However, the ADSL began to draw much interest as communication speed became important, riding the crest of the Internet boom. With an ADSL, it is possible to perform high-speed data communication with a current telephone line or telephone set and to simultaneously perform data communication and use a general telephone.

It is not possible to simultaneously use the telephone and perform data communication with a conventional MODEM. Also, in an ISDN, it is possible to simultaneously use the telephone and perform data communication, however, data communication speed is reduced by half. Meanwhile, the ADSL has advantages in that the crossing of lines does not occur and communication speed is not reduced, since the telephone and data communication use a low frequency and a high frequency, respectively, on one telephone line.

The ADSL 16 is called an asymmetric digital subscriber network because data transmission speed from a subscriber to a telephone station is different from data transmission speed from the telephone station to the subscriber. In the ADSL, communication speed is lower than in a CATV where downward communication speed is the same as upward

communication speed and high-speed data communication can be also performed. However, the ADSL has an advantage in that the communication speed is not reduced even when the number of users increases. It is pointed out that the
5 ADSL is advantageous in supporting asymmetric services such as the Internet, the VOD, and home shopping, but is not suitable for supporting symmetric bidirectional services such as video telephony, video conferencing, and remote diagnosis.

10

A point-to-point protocol (PPP) is a protocol for transmitting data in a PPP system. In the PPP system, information is exchanged through leased lines provided among the respective communication devices which exchange
15 information with each other using communication lines. Namely, when terminals in the respective branches need to be connected to a central computer, a system where the respective terminals are directly connected to the central computer without using a public communication network is
20 used. This is an example of a PPP system.

A dynamic host configuration protocol (DHCP) which is an automatic address access protocol automatizes a complicated and difficult address establishing operation.
25 The DHCP solves difficulties in establishing addresses by dynamically assigning an Internet protocol (IP) address when a subscriber's terminal begins operation and gives various information such as a type of device and an Internet site as well as the IP address to the
30 subscriber's terminal. In the DHCP, the IP address is dynamically assigned like in a bootstrap protocol (BOOTP), however, the address value itself is dynamically determined. The DHCP is operated by an information

providing server and the subscriber's terminal. There are three types of address assignment methods, namely, dynamic assignment, automatic assignment, and manual assignment.

5 In the present invention which relates to a communication method which uses the ADSL, the PPP, and the DHCP, the PPP system which adopts the ADSL provides the ID of the ISP using an option field of the DHCP message to the ATU-R, thus letting the subscriber directly receive
10 desired data from the selected ISP and control connection with the selected ISP. The above method will be described in detail with reference to Figure 2.

Figure 2 is a flowchart for explaining a method for
15 selecting the ISP using the DHCP in the PPP system which adopts the ADSL shown in Figure 1 and a method for controlling connection with the selected ISP.

First, the PC 104 designates the ID of the ISP with
20 which a user wishes to connect using the option field of the DHCP message, to the ATU-R 102 (step 200).

After the ATU-R 102 receives the message it opens a
connection with the ISP designated by the ID (step 202)
25 and transmits information indicating that the ISP is opened to the PC 104 (step 204). At this time, information on the ISP designated by the ID is stored in a memory (103) of the equipment 10 of the subscriber.

30 When the service desired by the PC 104 is terminated, the PC 104 transmits a message for closing the connection with the ISP with which the communication was performed, to the ATU-R 102 (step 206).

When ATU-C 122 receives the close message from the ATU-R 102, the ATU-C 112 closes the connection to the designated ISP (step 208). At this time, the information
5 stored in the memory 103 is erased.

As mentioned above, according to the present invention, it is possible for the subscriber to receive desired data from the designated ISP and to control the
10 point of time at which the connection with the ISP is opened and closed, since the subscriber PC directly designates the ID of the desired ISP using the option field of the DHCP message.

15 The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and
20 documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or
25 process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification
30 (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise,

each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extend to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

Claims

1. A method for selecting an Internet service provider (ISP) by an equipment of a subscriber in a point-to-point protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL),

wherein the equipment of the subscriber directly selects the ISP by designating the ID of the desired ISP using a dynamic host configuration protocol (DHCP).

2. The method of claim 1, wherein the ID of the ISP is designated using the option field of the DHCP message.

3. The method of claim 1 or 2, wherein the ID of the ISP is designated by a subscriber PC included in the equipment of the subscriber.

4. A method for controlling a connection with a selected Internet service provider (ISP) by an equipment of a subscriber using a dynamic host configuration protocol (DHCP) message in a point-to-point protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL), comprising the steps of:

25

(a) a subscriber PC, included in the equipment of the subscriber, designating the ID of a desired ISP using the option field of the DHCP message and providing the DHCP message to an ADSL terminal unit-remote (ATU-R) included in the equipment of the subscriber;

(b) the ATU-R which received the DHCP message opening the connection with the ISP designated by the ID and

transmitting information indicating that the connection with the ISP is opened to the subscriber PC;

(c) when a desired service is terminated, the subscriber PC transmitting a message for closing the connection with the designated ISP to the ATU-R; and

(d) when the close message is received, the ATU-R closing the connection with the designated ISP.

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5. The method of claim 4, in the step (b), further comprising a step of storing information on the ISP designated by the ID in a predetermined memory and, in the step (d), erasing the information stored in the predetermined memory when the close message is received.

6. A method for selecting an Internet service provider, substantially as hereinbefore described with reference to the accompanying drawings.

20

7. A method for controlling a connection with a selected Internet service provider, substantially as hereinbefore described with reference to the accompanying drawings.

Claims

1. A method for selecting an Internet service provider (ISP) by a subscriber in a point-to-point
5 protocol (PPP) system which adopts an asymmetric digital subscriber line (ADSL), comprising:

selecting said ISP directly by said subscriber by
designating an identification (ID) of the desired ISP
10 using a dynamic host configuration protocol (DHCP).

2. The method of claim 1, wherein the ID of the ISP is designated using an option field of the DHCP message.

15 3. The method of claim 1 or 2, wherein the ID of the ISP is designated by a subscriber PC.

4. The method of any of claims 1 to 3, wherein said subscriber PC is included in said subscriber.

20

5. A method for controlling a connection with a selected Internet service provider (ISP) by a subscriber using a dynamic host configuration protocol (DHCP) message in a point-to-point protocol (PPP) system which adopts an
25 asymmetric digital subscriber line (ADSL), comprising the steps of:

(a) designating an identification (ID) of a desired ISP using an option field of the DHCP message and
30 providing the DHCP message from a subscriber PC to an ADSL terminal unit-remote (ATU-R);

(b) opening a connection with the ISP designated by the ID via the ATU-R;

(c) transmitting information from the ATU-R to the subscriber PC indicating that the connection with the ISP is opened;

(d) transmitting a message for closing the connection with the designated ISP from the subscriber PC to the ATU-R when a desired service is terminated; and

(e) closing the connection with the designated ISP via the ATU-R when the close message is received.

6. The method of claim 5, in the step (b), further comprising a step of storing information on the designated ISP in a predetermined memory and, in the step (e), erasing the stored information in the predetermined memory when the close message is received.

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7. The method of claim 5 or 6, wherein the subscriber PC is included in the subscriber.

8. The method of claim 5, 6 or 7, wherein the ATU-R is included in the subscriber.

9. A method for selecting an Internet service provider, substantially as hereinbefore described with reference to the accompanying drawings.

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10. A method for controlling a connection with a selected Internet service provider, substantially as

hereinbefore described with reference to the accompanying drawings.



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Claims searched: 1-7

Examiner: Richard Howe
Date of search: 15 December 2000

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.R): H4K (KOT)

Int CI (Ed.7): H04L (12/16, 12/66, 29/06) ; H04M (11/06)

Other: Online : wpi ; epodoc ; japio

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	SE9802260 (TELIA AB) - see abstract	-

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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